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UNITED STATES DEPARTMENT OF AGRICULTURE  
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CURRENT SERIAL RECORDS

## STABILITY OF WHEAT SEDIMENTATION VALUES

by Lawrence Zeleny

Questions have been raised concerning the stability of wheat sedimentation values during storage. Some reports have indicated rather large losses in sedimentation value during the early months after harvest. The pertinent data on this subject obtained by the U. S. Department of Agriculture for 1962-crop wheat under actual practical conditions of storage are summarized in the following table.

Location of wheat	Kind of storage	Approximate length of storage <u>1/</u>	Number of bins or lots	Ave. change in sedimentation for entire storage period	Percentage of bins or lots changing 3 units or less
		<u>months</u>		<u>units</u>	
North Dakota	Farm bins	2 - 3	1482	+ 0.3	72
Colorado	Farm bins	9	36	+ 0.5	83
Kansas	Farm bins	Mostly 7 - 9	3730	- 2.9	54
Nebraska	Farm bins	1-5, mostly 5	3518	- 0.6	66
9 States	Bags in farm bins	8 - 11	25	- 4.6	52
Oklahoma	Country elevator	9	6	- 2.6 <u>2/</u>	66
5 So. American countries <u>3/</u>	Bags in granaries	3 - 8	55	- 0.3	96

1/ In nearly all instances the storage period began very shortly after harvest.

2/ Change in sedimentation during first month after harvest was not determined on the composited wheat in these six bins. Twenty-five samples of individual lots that were loaded into the bins showed an average loss of 0.6 units during the first month after harvest. The wheat in the bins showed an average loss of 2.0 units from the second to the ninth month. Thus, the average loss for the nine-month period was calculated to be 2.6 units.

3/ Colombia, Uruguay, Chile, Argentina, and Peru.

The weighted average for the entire 8,852 bins and other lots included in the various studies shows a loss of 1.4 sedimentation units during the storage period. Data for some individual lots showed rather large changes in sedimentation value, both plus and minus. In controlled studies, no real increases in sedimentation value under normal storage conditions have ever been demonstrated. For this reason, any apparent large increases in sedimentation value are believed to be fortuitous and should probably be ascribed to sampling, analytical, and/or recording errors. If errors of this kind lead to apparent increases in sedimentation value, it is only reasonable to assume that similar errors can also account for apparent but not real losses in sedimentation value.

In some instances, careful investigation of bins in which apparent large changes in sedimentation occurred disclosed similar large apparent changes in protein content. The cause was shown not to be any real change in either sedimentation or protein, but rather to be wide differences in the quality of the wheat in different parts of the bins and failure to obtain samples for testing that were representative of the entire bins.

The important conclusion to be drawn is that based on studies of 8,852 lots of 1962-crop wheat stored under normal or nearly normal storage conditions, the average change in sedimentation value was a loss of 1.4 units during periods ranging from 2 to 11 months, averaging about 6 months, and starting shortly after harvest. This is considered to be a small and almost negligible change.

Wheat stored under conditions permitting deterioration in baking strength would be expected to show a loss in sedimentation value commensurate with the loss in baking strength. Protein content, on the other hand, will remain essentially constant even though the wheat deteriorates to a point where it is no longer suitable for any food use.

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